

**STATE OF ARIZONA  
AQUIFER PROTECTION PERMIT NO. P-100333  
PLACE ID 827, LTF 84446, NEW INDIVIDUAL APP**

**1.0 AUTHORIZATION**

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2, and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A.A.C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes Energy Fuels Resources (USA) Inc. to continue to operate the Pinyon Plain Mine located in Coconino County, Arizona, over the groundwater of the Coconino Plateau Groundwater Basin, in Section 20, Township 29 North, Range 3 East of the Gila and Salt River Base Line and Meridian.

This permit becomes effective on the date of the Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked pursuant to A.A.C. R18-9-A213.

Because this facility is already subject to general APP coverage, if the issuance of this permit is appealed, the facility may continue to operate as long as the operation complies with the conditions of the existing general permits in accordance with A.R.S. § 49-324(B)(2). In addition, consistent with A.R.S. § 49-324(B)(2), the permit is considered to be issued to replace general permit coverage under A.A.C. R18-9-A307(C) only after all administrative and judicial appeals of the permit, if any, have been concluded and the permit can be used to authorize operations. Accordingly, all general permits will continue to be in effect and will not be revoked under A.A.C. R18-9-A307(C) until after all administrative and judicial appeals of the permit, if any, have been concluded and the permit can be used to authorize operations.

The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below per A.R.S. § 49-241(A), and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant and as determined at the applicable POC occurs as a result of the discharge from the facility per A.R.S. § 49-244.

**1.1. PERMITTEE INFORMATION**

<b>Facility Name:</b>	Pinyon Plain Mine
<b>Facility Address:</b>	Hwy 64 mm 226.75 FSR 305 Tusayan, AZ 86023
<b>County:</b>	Coconino
<b>Annual Registration Fee Flow Rate:</b>	57,000 gallons per day (gpd) (Discharge from Mine Shaft Sump to Non-Stormwater Impoundment)
<b>Permittee:</b>	Energy Fuels Resources (USA) Inc.
<b>Permittee Address:</b>	225 Union Boulevard, Suite 600 Lakewood, Colorado, 80228
<b>Facility Contact:</b>	Scott Bakken, Vice President, Regulatory Affairs
<b>Emergency Phone No.:</b>	303-389-4132
<b>Latitude/Longitude:</b>	35° 53' 00" N, -112° 05' 48" W
<b>Legal Description:</b>	Township 29 North, Range 3 East, Section 20, Gila and Salt River Base Line and Meridian

**1.2. AUTHORIZING SIGNATURE**



**Misael Cabrera, P.E., Director**  
Arizona Department of Environmental Quality  
Signed this 28th day of April, 2022.

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## 2.0 SPECIFIC CONDITIONS

[A.R.S. §§ 49-203(4), 49-241(A)]

### 2.1. FACILITY / SITE DESCRIPTION

[A.R.S. § 49-243(K)(8)]

The Pinyon Plain Mine is an underground uranium mine currently being developed by Energy Fuels Resources (USA) Inc. ("EFRI") in Coconino County, Arizona, on mining claims on U.S. Forest Service ("USFS") land within the Tusayan Ranger District of the Kaibab National Forest. The Mine operation encompasses approximately 17 acres located 150 miles north of Phoenix, 45 miles north of the Town of Williams, and 6 miles south of the community of Tusayan.

The Mine includes accessing the uranium ore from the main shaft, driven approximately 100 feet to the northeast of the breccia pipe to a depth of up to 1,997 feet below ground surface. The uranium ore is hosted in a geologic feature called a breccia pipe. A cylindrical to conical, vertically-oriented, mineralized breccia pipe formation containing naturally-concentrated uranium deposit predominates the site topography and laterally truncates layered geologic units down to the Redwall Formation. Drift adits will be constructed from the main shaft to the ore body to access the ore. A ventilation shaft will be drilled within the breccia pipe to exhaust air and provide an additional emergency point of access to the Mine workings. Excavated non-ore material is stockpiled on the Development Rock Stockpile and stored for use in reclamation. Ore material will be stockpiled on the lined Intermediate Ore Stockpile. No processing of ore will occur at the facility. Ore material will be periodically hauled off-site for milling and beneficiation at the White Mesa Mill near Blanding, Utah. Groundwater harvested from the mine shaft for dust control may be used if treated using a water treatment system, which is designed to treat to 0.05 mg/l for arsenic and to 0.03 mg/l for uranium. Water from the lined mine shaft sump will be pumped to the lined non-stormwater impoundment or a water storage tank. As needed, an enhanced evaporation system is used to reduce the volume of water in the lined Non-Stormwater Impoundment. Beneficial use of groundwater and water stored in tanks are not regulated under the APP program per ARS § 49-250(B)(6), (21), and (22).

Groundwater occurs in two separate aquifers beneath the site: the shallower, perched unconfined Coconino aquifer, and the deep, confined regional Redwall-Muav aquifer. Depths to these aquifers are approximately 941 feet and 2,870 feet below ground surface, respectively. Although hydraulic pressure in the confined regional aquifer has caused water in the onsite Redwall-Muav water supply/monitoring well to rise to a depth as shallow as 2,525 feet, the depth to the top of the confined regional aquifer beneath the site is approximately 2,870 feet. The groundwater flow direction and the extent of the cone of depression generated by drainage from the mine shaft in the Coconino will be determined after water level elevation data from the three recently-installed monitoring wells are analyzed in accordance with Section 3.0, Compliance Schedule Item 3. The groundwater flow direction in the Redwall-Muav aquifer is to the southwest based on regional studies.

This Individual APP consolidates the existing APP General Permits, one Type 3.04 for the Non-Stormwater Impoundment and two Type 2.02 for the Development Rock Stockpile and the Intermediate Ore Stockpile, for the Pinyon Plain Mine. In addition to this permit, numerous existing groundwater protections are contained in the USFS-approved Plan of Operations, Record of Decision and Clean Closure Plan for the Pinyon Plain Mine.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude	Longitude
Lined Non-Stormwater Impoundment	35° 52' 57.14" N	-112° 05' 44.24" W
Development Rock Stockpile	35° 52' 56.43" N	-112° 05' 49.07" W
Intermediate Ore Stockpile	35° 52' 58.11" N	-112° 05' 43.71" W

### 2.1.1. Operational Limitations

1. Mining shall not occur above 5340 feet above mean sea level and below 4508 feet above mean sea level.
2. Groundwater harvested from the mine shaft for on-site dust control may be used if treated using a water treatment system, which is designed to treat to 0.05 mg/l for arsenic and to 0.03 mg/l for uranium.

### 2.1.2. Annual Registration Fee

[A.R.S. § 49-242 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. The annual registration fee flow rate is established by the maximum currently designed pumping rate from the mine shaft sump to the non-stormwater impoundment, identified in Section 1.1. If the facility is not constructed or is incapable of discharge, the permittee may be eligible for reduced fees pursuant to A.A.C. R18-14-104(A), Table 2. Send all correspondence requesting reduced fees to the Groundwater Protection Value Stream. Please reference the permit number, LTF number, and the reason for requesting reduced fees under this rule.

### 2.1.3. Financial Capability

[A.R.S. § 49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The estimated dollar amount for facility closure and post-closure is \$1,539,816.00. The permittee shall maintain financial capability throughout the life of the facility. The financial assurance mechanism will be demonstrated through A.A.C. R18-9-A203(C)(2) Performance Surety Bond, in accordance with A.A.C. R18-9-A203(B)(1) and through an existing bond payable to the United States Forest Service in the amount of \$1,406,616 and with the supplemental Surety Bond with ADEQ of \$132,581.

## 2.2. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

[A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

Facilities regulated by this permit shall be designed, constructed, operated, and maintained to meet requirements specified by A.R.S. §49-243(B) and A.A.C. R18-9-A202(A)(5).

### 2.2.1. Engineering Design

BADCT description for the permitted facilities is presented in Section 4.1, Table 6: PERMITTED FACILITIES AND BADCT.

### 2.2.2. Site-Specific Characteristics

Based on review of the hydrogeologic report and other sources, ADEQ concludes that the natural hydrogeologic protections at the mine site are expected to prevent any potential impacts to groundwater resulting from mining operations. These natural hydrogeologic factors include:

1. Simple, 'layer cake' geology, the aridity of the site, and structural simplicity are conducive to greater predictability in assessing and controlling potential impacts to the subsurface;
2. The southwesterly regional dip of the layered geologic section in the vicinity of the mine directs groundwater flow southwest away from the Grand Canyon coupled with the groundwater divide present between the mine site and the Grand Canyon. A groundwater divide acts as hydrogeologic control and provides an element of natural protection by preventing northward migration of groundwater.
3. The demonstrated absence of large geologic structures such as faults, open joints, fractures, or solution cavities that would increase permeability and enhance circulation of water within the subsurface at the Mine site. This conclusion is supported by the ancient age (> 10,000 years) of

perched groundwater encountered within the Coconino and of groundwater within the regional Redwall-Muav aquifer beneath the site, and is consistent with the measurements of relatively low hydraulic conductivity and transmissivity obtained from hydraulic tests in site wells, and with the conclusions from aerial overflights and field mapping that such features are not present within approximately 2 miles of the site;

4. The low permeability of the geologic formation (Moenkopi) directly underlying all surface features of the site which will minimize the potential for any surface impacts to be propagated into the subsurface and protect the Coconino Formation from any potential discharge from surface facilities;
5. A significant degree of natural protection exists from thick layers of low permeability rock. Expert examination of mine site drill cores conducted during previous investigations indicate very low permeability and absence of significant secondary porosity, and the examiners conclusion that no water from the surface has impacted the breccia pipe ores for millions of years.
6. The abundance of iron oxide rich sediments throughout the stratigraphic column which have the ability to sorb dissolved metals that may be present in the water.
7. A 'double layer' of protection between the bottom of the Mine shaft (the Mine sump) and the regional Redwall-Muav aquifer consisting of:
  - a. Over 200 feet of low permeability Lower Supai Formation (considered a 'confining' unit) that underlies the workings; and
  - b. the confinement of the regional aquifer to the Muav Limestone which is protected, successively, by approximately the upper 90 feet of the Muav; more than 100 feet of overlying Temple Butte Formation; and hundreds of feet of overlying Redwall Limestone. As a result, the Mine workings will bottom in nearly impermeable rock, and will be separated from the regional Redwall-Muav aquifer by at least 500 feet of nearly impermeable rock;
8. The near impermeability of the breccia pipe and surrounding rocks beneath the Coconino and the confined nature of the regional Redwall-Muav aquifer, which would essentially prevent any potential contamination originating from site operations from ever mixing into the Redwall-Muav aquifer, due to the hydraulic pressure within the aquifer, and the nearly impermeable rocks capping the aquifer. The rocks capping the confined aquifer are of necessity nearly impermeable otherwise the hydraulic pressure within the aquifer could not be maintained.

### **2.2.3. Pre-Operational Requirements**

Not applicable.

### **2.2.4. Operational Requirements**

The discharging facilities shall be operated according to and inspected for compliance with the requirements in Section 4.2, Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING, and recorded in a log as required by Section 2.7.2. If damage is identified during an inspection that could cause or contribute to a discharge, proper repairs shall be promptly performed in accordance with Section 2.6 of this permit and recorded in a log.

## **2.3. DISCHARGE LIMITATIONS**

[A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The permittee shall operate and maintain all permitted facilities to prevent unauthorized discharges pursuant to A.R.S. § 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure, uncontrollable leakage, berm breaches that result in an unexpected loss of fluid, accidental spills, or other unauthorized discharges. The discharge limitations (DLs) in this section are not applicable to any discharge caused by precipitation in excess of a single 100-year/24 hour storm event or process overflow during a power outage exceeding 24 hours in duration.

### 2.3.1. Discharge Limitations for the Development Rock Stockpile

Runoff from the Development Rock Stockpile shall be contained by downstream seepage/stormwater retention facilities as described in the APP application and in Section 4.2, Table 6: PERMITTED FACILITIES AND BADCT.

### 2.3.2. Discharge Limitations for the Intermediate Ore Stockpile

Runoff from the Intermediate Ore Stockpile shall be contained by downstream seepage/stormwater retention facilities as described in the APP application and in Section 4.2, Table 6: PERMITTED FACILITIES AND BADCT.

### 2.3.3. Non-Stormwater Impoundment

The permitted non-stormwater impoundment shall only receive stormwater runoff from the fenced area of the mine site, the Development Rock Stockpile and Intermediate Ore Stockpile, and water collected from the lined Mine Shaft Sump or water capture rings.

## 2.4. POINT OF COMPLIANCE (POC)

[A.R.S. § 49-244]

The POC(s) are established by the following monitoring locations:

Table 2: POINT(S) OF COMPLIANCE (POC) MONITORING WELLS						
POC #	POC Location	ADWR Registration Number	Latitude (North)	Longitude (West)	Aquifer	Screen Interval (ft bls)
POC #1	East Well (Hole ID: CYN-MON-01)	55-924769	35° 53' 00.0801"	-112° 05' 41.3282"	Coconino	920-1,148
POC #2	North Well (Hole ID: CYN-MON-02)	55-924770	35° 53' 02.5022"	-112° 05' 47.5984"	Coconino	920-1,130
POC #3	South Well (Hole ID: CYN-MON-03)	55-924771	35° 52' 55.2988"	-112° 05' 47.1674"	Coconino	920-1,145
POC #4	Located North of the Non-Stormwater Impoundment	55-515772	35° 53' 00"	-112° 05' 48"	Redwall-Muav	2,584-2,960

Monitoring requirements for each POC Monitoring Well are listed in Section 4.2, Table 8: AMBIENT GROUNDWATER MONITORING and Table 9: COMPLIANCE GROUNDWATER MONITORING.

Once ambient groundwater flow direction in the Coconino Aquifer is determined, which may not occur until after mining activities have ceased, the Permittee may submit an application to amend the Individual APP to designate one of the three Coconino POC Wells as the downgradient POC Well and the other two wells as non-POC monitoring wells.

The Director may amend this permit to designate additional POCs and/or monitoring parameters, if information on groundwater gradients or groundwater usage indicates the need.



## **2.5. MONITORING REQUIREMENTS**

[A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. Unless otherwise provided, monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

### **2.5.1. Discharge Monitoring**

#### **2.5.1.1. Routine Discharge Monitoring**

The permittee shall monitor the wastewater quarterly according to Section 4.2, Table 7: ROUTINE DISCHARGE MONITORING. A representative sample of the wastewater shall be collected from the outflow of the Mine Shaft Sump in the Lined Non-Stormwater Impoundment.

### **2.5.2. Facility / Operational Monitoring**

At a minimum, permitted facilities shall be inspected for performance levels listed in Section 4.2, Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING. If damage is identified during an inspection that could cause or contribute to an unauthorized discharge pursuant to A.R.S. § 49-201(12), proper repairs shall be promptly performed. Results of these inspections and monitoring activities shall be documented and maintained at the facility location for at least 10 years, and as required by Section 2.7.2 of this permit.

### **2.5.3. Groundwater Monitoring and Sampling Protocols**

Compliance groundwater monitoring is required under the terms of this permit. For all sampling methods, static water levels in the Coconino monitoring wells shall be measured and recorded prior to sampling.

Wells shall be purged of at least three borehole volumes (as calculated using the static water level where possible) or until field parameters (pH, temperature, and conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80 percent of the original borehole volume, or for 24 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as "dry" for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the Self-Monitoring Report Form (SMRF).

As an alternative method for sampling, the permittee may conduct the sampling using the low-flow purging method following accepted EPA, USGS, and DOD protocols. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

As a third alternative method for sampling within POC wells with very low recharge rates, the permittee may conduct the sampling using no-purge sampling techniques using HydraSleeve™ or similar type methodology. The use of HydraSleeve™ or similar type samplers shall follow accepted EPA, USGS, and DOD protocols. In addition, the HydraSleeve™ or similar type sampler shall be placed just below the water table.

#### 2.5.3.1. Point of Compliance Well Replacement

In the event that one or more of the designated POC wells should become unusable or inaccessible due to damage, or any other event, a replacement POC well shall be constructed and installed upon approval by ADEQ. If the replacement well is 50 feet or less from the original well, the ALs and/or aquifer quality limits (AQLs) calculated for the designated POC well may apply to the replacement well, following the consultation and agreement between the permittee and ADEQ. Otherwise, the ALs and/or AQLs shall be set following the provisions in Section 2.5.3.3 and Section 2.5.3.4 of this permit.

#### 2.5.3.2. Ambient Groundwater Quality Monitoring

The permittee shall utilize a minimum of ten rounds of ambient groundwater monitoring for the four POC wells for all constituents listed in Section 4.2, Table 8: AMBIENT GROUNDWATER MONITORING.

#### 2.5.3.3. Alert Levels for Point of Compliance Wells

ALs shall be calculated for all constituents with an established numeric AWQS for each of the four POC wells listed on Table 9: COMPLIANCE GROUNDWATER MONITORING. For any new or replacement POC wells, ALs shall be calculated for all constituents with an established numeric AWQS, as described below.

As per the compliance schedule item Nos. 4 and 5, following receipt of the laboratory analyses for the final ambient groundwater monitoring period referenced in Section 4.2, Table 8: AMBIENT GROUNDWATER MONITORING the permittee shall submit the ambient groundwater data in tabulated form to the Groundwater Protection Value Stream for review and identify which of the three Coconino groundwater monitoring wells will be selected as the POC well in the Coconino aquifer. Copies of all laboratory analytical reports, field notes, and the Quality Assurance/Quality Control (QA/QC) procedures used in collection and analyses of the samples for all parameters listed in Section 4.2, Table 8: AMBIENT GROUNDWATER MONITORING to be established for each POC well, shall be submitted to the Groundwater Protection Value Stream. The permittee may submit a report with the calculations for each AL and AQL included in the permit for review and approval by ADEQ, or the permittee may defer calculation of the ALs and AQLs by the Groundwater Protection Value Stream. The ALs shall be established and calculated by the following formula, or another valid statistical method submitted to Groundwater Protection Value Stream in writing and approved for this permit by the Groundwater Protection Value Stream:

$$AL = M + KS$$

Where M = mean, S = standard deviation, and K = one-sided normal tolerance interval with a 95% confidence level (Lieberman, G.J. (1958) Tables for One-sided Statistical Tolerance Limits: Industrial Quality Control, Vol XIV, No. 10). Obvious outliers should be excluded from the data used in the AL calculation.

The following criteria shall be met in establishing ALs in the permit:

1. The AL shall be calculated for a parameter using the analyses from a minimum of eight sample events. If the exclusion of outliers from the data results in fewer than eight data points for any one parameter, the permittee will have the option of continuing ambient groundwater quality monitoring until a minimum of eight data points are available for all parameters.
2. Any data where the laboratory Practical Quantitation Limit (PQL) exceeds 80% of the AWQS shall not be included in the AL calculation. If the exclusion of data due to laboratory PQLs results in fewer than eight data points for any one parameter, the permittee will have the option of continuing ambient groundwater quality monitoring until a minimum of eight data points are available for all parameters.

3. If a parameter is below the detection limit, the permittee must report the value as “less than” the numeric value for the PQL or detection limit for the parameter, not just as “non-detect”. For those parameters, the permittee shall use a value of one-half the reported detection limit for the AL calculation.
4. If the analytical results from more than 50% of the samples for a specific parameter are non-detect, then the AL shall be set at 80% of the AWQS.
5. If the calculated AL for a specific constituent and well is less than 80% of the AWQS, the AL shall be set at 80% of the AWQS for that constituent in that well.

#### **2.5.3.4. Aquifer Quality Limits for POC Wells**

For each of the monitored analytes for which a numeric AWQS has been adopted, the AQL shall be established as follows:

1. If the calculated AL is less than the AWQS, then the AQL shall be set equal to the AWQS.
2. If the calculated AL is greater than the AWQS, then the AQL shall be set equal to the calculated AL value, and no AL shall be set for that constituent at that monitoring point.

#### **2.5.3.5. Aquifer Quality Limit for Uranium for POC Wells**

For Uranium, the AQL shall be established as follows:

1. The AQL shall be calculated using the analyses from a minimum of eight sample events from each POC. If the exclusion of outliers from the data results in fewer than eight data points for uranium, the permittee will have the option of continuing ambient groundwater quality monitoring until a minimum of eight data points are available for uranium.
2. After statistically evaluating the ambient data for uranium in each POC well, the AQL for each POC well shall be set by calculating the ambient data using the formula set forth in Section 2.5.3.3 or another appropriate statistical methodology approved by ADEQ. If the calculated ambient data is less than 0.03 mg/L, then the AQL shall be set equal to 0.03 mg/L. If the calculated ambient data is greater than 0.03 mg/L, then the AQL shall be set equal to the calculated ambient data.

#### **2.5.3.6. Compliance Groundwater Quality Monitoring for POC Wells**

Quarterly compliance groundwater monitoring in each POC well shall commence within the first calendar quarter after ALs and AQLs have been established. For quarterly compliance monitoring, the permittee shall analyze groundwater samples for the parameters listed in Section 4.2, Table 9: COMPLIANCE GROUNDWATER MONITORING.

#### **2.5.4. Surface Water Monitoring and Sampling Protocols**

Routine surface water monitoring is not required under the terms of this permit.

### **2.5.5. Analytical Methodology**

All samples collected for compliance monitoring shall be analyzed using Arizona state-approved methods. If no state-approved method exists, then any appropriate EPA-approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. If all methods have detection limits higher than the applicable limit, the permittee shall follow the applicable contingency requirements of Section 2.6 and may propose "other actions" including amending the permit to set higher limits. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification unless exempted under A.R.S. § 36-495.02. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state-certified laboratories can be obtained at the address below:

Arizona Department of Health Services  
Office of Laboratory Licensure and Certification  
250 North 17th Avenue  
Phoenix, AZ 85007  
Phone: (602) 364-0720

### **2.5.6. Installation and Maintenance of Monitoring Equipment**

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the Groundwater Protection Value Stream for approval prior to installation, and the permit shall be amended to include any new monitoring points.

## **2.6. CONTINGENCY PLAN REQUIREMENTS**

[A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

### **2.6.1. General Contingency Plan Requirements**

At least one copy of this permit and the approved contingency and emergency response plan submitted in the application shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL exceedance, or violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3, unless more specific reporting requirements are set forth in Section 2.6.2 through 2.6.5.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL or DL. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling had been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit.

**2.6.2. Exceeding of Alert Levels and Performance Levels**

**2.6.2.1. Exceeding of Performance Levels Set for Operational Conditions**

**2.6.2.1.1. Performance Levels Set for Freeboard in Surface Impoundment**

In the event that freeboard performance levels established in Section 4.2, Table 6: PERMITTED FACILITIES AND BADCT in a surface impoundment are not maintained, the permittee shall:

1. As soon as practicable, cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the reservoir until the water level is restored at or below the freeboard performance level.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the affected system as necessary to avoid future occurrences.
3. Within 30 days of discovery, initiate repairs to the affected system, structure, or other component as necessary to avoid future occurrences. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary, submit an amendment application within 90 days of discovery.
5. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

**2.6.2.1.2. Performance Level Set for Mine Shaft Sump Water Level**

In the event that the performance level established in Section 4.2, Table 6: PERMITTED FACILITIES AND BADCT for the Mine Shaft Sump Water Level is not maintained, the permittee shall:

1. As soon as practicable, take the necessary steps to restore the water level in the sump at or below the performance level.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the sump and associated fluid removal processes as necessary to avoid future occurrences.
3. Within 30 days of discovery, initiate repairs to the sump and associated fluid removal processes as necessary to avoid future occurrences. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary, submit an amendment application within 90 days of discovery.
5. The facility is no longer on alert status once the operational indicator no longer indicates that the performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

**2.6.2.1.3. Performance Levels, other than Performance Levels Addressed under Sections 2.6.2.1.1 and 2.6.2.1.2**

1. If an operational performance level (PL) listed in Section 4.2, Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
  - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
  - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.
2. The PL exceedance, results of the investigation, and any corrective action taken shall be reported to the Groundwater Protection Value Stream, within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 2.6 and any necessary contingency measures to resolve problems identified by the investigation which may have led to a PL being exceeded. To implement any other corrective action the permittee may choose to obtain prior approval from ADEQ according to Section 2.6.6.

**2.6.2.2. Exceeding of Alert Levels Set for Discharge Monitoring**

Not applicable

**2.6.2.3. Exceeding of Alert Levels in Groundwater Monitoring**

**2.6.2.3.1. Alert Levels for Indicator Parameters**

Monitoring for Indicator Parameters is not required under the terms of this permit.

**2.6.2.3.2. Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards**

1. If an AL for a pollutant set in Section 4.2, Table 9: COMPLIANCE GROUNDWATER MONITORING has been exceeded, the permittee may conduct verification sampling of the pollutant(s) that exceed their respective AL(s) within 5 days of becoming aware of an AL exceedance. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms the AL exceedance or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring for the pollutant(s) exceeding their respective AL(s) to monthly. In addition, the permittee shall immediately initiate an investigation of the cause of the AL exceedance, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, and hydrologic review of groundwater conditions including upgradient water quality.

3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL exceedance. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Groundwater Protection Value Stream, that (a) although an AL is exceeded, the pollutant(s) that exceed their respective AL(s) are not reasonably expected to cause a violation of an AQL; or (b) demonstrating that the AL exceedance is due to natural phenomenon and not as a result of a discharge from the facility, such as may result from an equilibration of groundwater levels in the area of the cone of depression surrounding the mine shaft following plugging and sealing of the mine shaft. The demonstration may propose a revised AL or monitoring frequency, for those pollutant(s) that exceed their respective AL(s), for approval in writing by the Groundwater Protection Value Stream.
4. Within 30 days after confirmation of an AL exceedance for those pollutant(s), the permittee shall submit the laboratory results to the Groundwater Protection Value Stream along with a summary of the findings of the investigation, the cause of the AL exceedance, and actions taken to resolve the problem.
5. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
6. The increased monitoring for those pollutant(s) required as a result of an AL exceedance may be reduced to the frequency shown for groundwater monitoring in Section 4.2, Table 9: COMPLIANCE GROUNDWATER MONITORING, if the results of four sequential sampling events demonstrate that the parameter(s) does/do not exceed their respective AL(s).
7. If the increased monitoring required as a result of an AL exceedance for those pollutant(s) continues for more than six sequential sampling events, the permittee shall submit a second report documenting an investigation of the continued AL exceedance within 30 days of the receipt of laboratory results of the sixth sampling event.

**2.6.2.3.3. Alert Levels to Protect Downgradient Users from Pollutants Without Numeric Aquifer Water Quality Standards**

Not applicable.

**2.6.2.3.4. Alert Level for Groundwater Level**

Not applicable.

**2.6.3. Discharge Limit Violation**

**2.6.3.1. Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid**

In the event of overtopping, liner failure, containment structure failure, or unexpected loss of fluid as described in Section 2.3, the permittee shall take the following actions:

1. As soon as practicable, cease all discharges as necessary to prevent any further releases to the environment, including removal of any fluid remaining in the impoundment as necessary, and capture and containment of all escaped fluids.
2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.

3. Within five days collect representative samples of the fluid remaining in affected impoundments and drainage structures, analyze sample(s) according to Section 4.2, Table 7: ROUTINE DISCHARGE MONITORING and report in accordance with Section 2.7.3 (Permit Violation and Alert Level Status Reporting). In the 30-day report required under Section 2.7.3 or within 5 days of receiving the analytical results of sampling, include a copy of the analytical results and forward the report to Groundwater Protection Value Stream.
4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the discharging facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the discharging facility. The permittee shall not resume discharge to the facility until repairs of any failed liner or structure are performed.

Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and available for ADEQ review. Record in the facility log/recordkeeping file the amount of fluid released, a description of any removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log Book Recordkeeping).

5. Within 30 days of discovery of the incident, submit a report to Groundwater Protection Value Stream as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 4 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 days of discovery, conduct an assessment of the impacts to soil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could or did cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ, for approval, a corrective action plan to address such impacts, including identification of remedial actions and a schedule for completion of activities. At the approval of ADEQ, the permittee shall implement the approved plan.
7. Within 30 days of completion of corrective actions, submit to Groundwater Protection Value Stream, a written report as specified in Section 2.6.6 (Corrective Actions).
8. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

#### **2.6.3.2. Overtopping of a Surface Impoundment**

If overtopping of fluid from a permitted surface impoundment occurs, and results in a discharge pursuant to A.R.S. § 49-201(12), the permittee shall:

1. As soon as practicable, cease all discharges to the surface impoundment to prevent any further releases to the environment.
2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.
3. Within five days, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.2, Table 7: ROUTINE DISCHARGE MONITORING. Within 30 days of the incident, submit a copy of the analytical results to Groundwater Protection Value Stream.



4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Section 4.2, Table 6: PERMITTED FACILITIES AND BADCT. Record in the facility log/recordkeeping file the amount of fluid released, a description of the removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection/Log Book/Recordkeeping File).
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, and based on sampling in Item No. 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

#### **2.6.3.3. Inflows of Unexpected Materials to a Surface Impoundment**

The types of materials that are expected to be placed in the permitted surface impoundments are specified in Section 2.3 (Discharge Limitations). If any unexpected materials flow to a permitted surface impoundment, the permittee shall:

1. As soon as practicable, cease all unexpected inflows to the surface impoundment(s).
2. Within 24-hours of discovery, notify Groundwater Protection Value Stream.
3. Within five (5) days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.
4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 3 listed above.

5. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions including remediation.

#### **2.6.3.4. Slope and Berm Failures**

If a slope or berm failure involving heap or dump leach facilities, waste rock dumps, tailings facilities, or retention structures (dams) occurs which affects the ability of the facility to operate in accordance with this permit or results in an unauthorized discharge, the permittee shall promptly close the active area in the vicinity of the failure, and conduct a field investigation of the failure to analyze its origin and extent, its impact on the facility operations, temporary and permanent repairs and changes in operational plans considered necessary. Within 30 days of a slope or berm failure, the permittee shall submit a written report, which includes the documentation specified in Section 2.7.3 of this permit. The permittee shall initiate the actions necessary to mitigate the impacts of the failure, consistent with Department approval.

#### **2.6.4. Aquifer Quality Limit Exceedances**

1. If an AQL set in Section 4.2, Table 9: COMPLIANCE GROUNDWATER MONITORING has been exceeded, the permittee may conduct verification sampling for those pollutant(s) that were above their respective AQL(s) within five (5) days of becoming aware of the exceedance. The permittee may use results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling does not confirm an AQL exceedance, no further action is needed under this Section.
3. If verification sampling confirms that an AQL was exceeded for any parameter or if the permittee opts not to perform verification sampling, then, the permittee shall increase the frequency of monitoring for those parameters to monthly.

In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water, or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.

4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.
5. The increased monitoring for those pollutant(s) required as a result of an AQL exceedance may be reduced to the original sampling frequency for each respective pollutant, if the results of four sequential sampling events demonstrate that the parameter(s) does not exceed their respective AQL(s), and upon ADEQ approval.

**2.6.5. Emergency Response and Contingency Requirements for Unauthorized Discharges**

[A.R.S. § 49-201(12) AND PURSUANT TO A.R.S. § 49-241]

**2.6.5.1. Duty to Respond**

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

**2.6.5.2. Discharge of Hazardous Substances or Toxic Pollutants**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. § 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of hazardous material which (a) has the potential to cause an AWQS or AQL exceedance, or (b) could pose an endangerment to public health or the environment.

**2.6.5.3. Discharge of Non-Hazardous Materials**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of non-hazardous material which has the potential to cause an AQL exceedance, or could pose an endangerment to public health or the environment.

**2.6.5.4. Reporting Requirements**

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to the Groundwater Protection Value Stream within 30 days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 2.7.3. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in the notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.

**2.6.6. Corrective Actions**

Specific contingency measures identified in Section 2.6 have already been approved by ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Groundwater Protection Value Stream prior to implementing a corrective action to accomplish any of the following goals in response to exceedance of an AL, AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the Groundwater Protection Value Stream, a written report describing the causes, impacts, and actions taken to resolve the problem.

## **2.7. REPORTING AND RECORDKEEPING REQUIREMENTS**

[A.R.S. § 49-243(K)(2) and A.A.C. R18-9-A206(B) and R18-9-A207]

### **2.7.1. Self-Monitoring Report Form**

1. The permittee shall complete the Self-Monitoring Reporting Forms (SMRFs) provided by ADEQ, and submit the completed report through the myDEQ online reporting system. The permittee shall use the format devised by ADEQ.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a reporting period, the permittee shall enter "not required" on the form, include an explanation, and submit the form to the Groundwater Protection Value Stream.
3. The following tables contained in Section 4.0 list the monitoring parameters and the frequencies for reporting results on the SMRF:
  - a. Table 7: ROUTINE DISCHARGE MONITORING
  - b. Table 9: COMPLIANCE GROUNDWATER MONITORING

The parameters listed in the above-identified tables from Section 4.0 are the only parameters for which SMRF reporting is required.

### **2.7.2. Operation Inspection / Log Book Recordkeeping**

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms, or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book; and
7. Monitoring records for each measurement shall comply with A.A.C. R18-9-A206(B)(2).

**2.7.3. Permit Violation and Alert Level Status Reporting**

1. The permittee shall notify the Groundwater Protection Value Stream within five (5) days (except as provided in Section 2.6.5) of becoming aware of an AL exceedance, or violation of any permit condition, AQL, or DL for which notification requirements are not specified in Sections 2.6.2 through 2.6.5.
2. The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition, AQL, or DL. The report shall document all of the following:
  - a. Identification and description of the permit condition for which there has been a violation and a description of the cause;
  - b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue;
  - c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;
  - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;
  - e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and
  - f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

**2.7.4. Operational, Other or Miscellaneous Reporting**

The permittee shall record the information as required in Section 4.2, Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING in the facility log book as per Section 2.7.2, and report to the Groundwater Protection Value Stream any exceedances as per Section 2.6.2.

**2.7.4.1. Initial Monitoring Report**

Per Section 3.0, Compliance Schedule Item #3, the Permittee shall submit an initial monitoring report. At a minimum the report shall include identification of monitoring wells for the perched Coconino aquifer. This report shall contain a description of the well installation; as-built well completion diagrams; ADWR documents related to each well; drill hole lithology; well development; survey data; water level measurement and hydraulic test results; and data analysis, including a determination of hydraulic conductivity estimates, flow direction and gradient estimates and the estimated rate of groundwater flow within the saturated Coconino. The submittal shall be sealed by an Arizona Registered Geologist or other qualified registrant.

**2.7.4.2. Annual Report**

Per Section 3.0, Compliance Schedule Item #7, the Permittee shall submit an annual report. At a minimum the report shall include pumping operational summary, sump water quality analytical results, groundwater elevations, groundwater quality summary. The annual report shall describe the water budget throughout the mine operations. The report shall include water meter results for the shaft sump and water rings. The report shall include the current stage of the construction of the Development Rock Stockpile (DRS) and the Intermediate Ore Stockpile (IOS).

#### **2.7.4.3. Groundwater Monitoring Demonstration Report**

The permittee shall submit a Groundwater Monitoring Demonstration Report in accordance with the Compliance Schedule in Section 3.0, Item #8. Every two years from date of permit issuance including the post-closure period, the Permittee shall submit such a report. In consultation with ADEQ, the frequency of report preparation may be adjusted to a longer interval based on trends in data used to support this report and based on the status of the mine. For example, a longer reporting interval may be appropriate if data trends show that conditions are changing slowly.

The Groundwater Monitoring Demonstration report shall provide an analysis and update of groundwater conditions and the monitoring network through use of written narrative, maps, tables, figures, and hydrogeologic cross-sections as appropriate. The report shall include at a minimum: water level hydrographs for each Coconino POC and monitoring well and groundwater seep elevations in the mine shaft (when accessible), trends in water quality and constituents in the compliance monitoring program for each well; stiff diagrams and/or tri-linear diagrams as appropriate; updated groundwater contour maps and re-evaluation of groundwater flow direction and gradient when needed; updated limits of the cone of depression, zone of influence and area of capture; utilizing plan view maps and/or cross-sections as appropriate; and recommendations for optimization and/or adjustments to the monitoring network based on aquifer properties, groundwater flow directions and groundwater monitoring results. The report will also address data gaps, and discuss the adequacy of the monitoring well network, including well locations and screened intervals. The report shall be sealed by an Arizona Registered Geologist or other qualified registrant.

Depth to water measurements will be converted to elevations above mean sea level. Water elevation data, hydraulic conductivity estimates (based on pumping tests), and seepage rate data, in conjunction with the estimated thickness and elevation of the Coconino seepage face in the shaft will be used to estimate perched water flow directions (including pre-shaft flow direction) and to better define the cone of depression caused by seepage of water from the Coconino into the shaft. Use of seepage face elevations in these calculations will be primarily qualitative, due to the difficulty in accurately measuring seepage face position, and because the seepage face elevation may not accurately estimate the position elevation of the water table, which is defined by a pressure surface (where the pressure is equal to atmospheric pressure).

The estimated pre-shaft flow direction will be used to determine proper placement of a downgradient monitoring well in the Coconino. This is appropriate because, subsequent to mining and shaft sealing, the cone of depression is expected to dissipate, and pre-existing groundwater conditions restored.

Although it is anticipated that the existing well in the Coconino located to the south-southwest, will serve as the downgradient monitoring well, another well may be deemed appropriate, or a separate well may be installed at an appropriate time after all well data have been collected and analyzed, to monitor flow downgradient from the shaft based on the estimated direction of the pre-shaft hydraulic gradient. Numerical and/or analytical models, in conjunction with hydraulic conductivity data obtained from pumping tests, water level elevations in wells (including onsite wells and the offsite USGS well), and seepage face estimates (converted to elevation), will be used to evaluate both the cone of depression and pre-existing hydraulic gradient. The evaluation of the existing cone of depression will account for deformation caused by the pre-existing sloping water table, and such information will be used in preparing water level contour maps.

### 2.7.5. Reporting Location

All Self-Monitoring Report Forms (SMRFs) shall be submitted through the myDEQ portal accessible on the ADEQ website at: <http://www.azdeq.gov/welcome-mydeq>

All other documents required by this permit shall be mailed to:

The Arizona Department of Environmental Quality  
Groundwater Protection Value Stream  
Mail Code 5415B-3  
1110 West Washington Street  
Phoenix, Arizona 85007  
Phone (602) 771-4571

### 2.7.6. Reporting Deadline

The following table lists the quarterly report due dates:

Table 3: QUARTERLY REPORTING DEADLINES	
Monitoring Conducted During Quarter:	Quarterly Report Due By:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the semi-annual and annual report due dates if applicable:

Table 4: (SEMI-)ANNUAL AND ANNUAL REPORTING DEADLINES	
Monitoring Conducted:	Report Due By:
Semi-annual: January-June	July 30
Semi-annual: July-December	January 30
Annual: January-December	January 30

### 2.7.7. Changes to Facility Information in Section 1.0

The Groundwater Protection Value Stream shall be notified within ten days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person, or Emergency Telephone Number.

### 2.8. Temporary Cessation

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Groundwater Protection Value Stream before ceasing operation of the facility for a period of 60 days or greater. The permittee shall take the following measures upon temporary cessation:

1. Correct the problem that caused the temporary cessation of the facility; and
2. Notify the Groundwater Protection Value Stream with a monthly facility status report describing the activities conducted on the treatment facility to correct the problem.
3. Submittal of Self-Monitoring Report Forms (SMRFs) is still required; report “temporary cessation” in the comment section.

At the time of notification, the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Groundwater Protection Value Stream of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

#### **2.8.1. Terms of in Operation**

The facility will be considered to be in operation so long as any water is being pumped from the mine shaft to the Non-Stormwater Impoundment and the facility is being managed in accordance with this permit.

### **2.9. Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the Groundwater Protection Value Stream of the intent to cease operation without resuming activity for which the facility was designed or operated. Submittal of SMRFs is still required; report "closure in process" in the comment section.

#### **2.9.1. Closure Plan**

The mine currently has in place a Clean Closure Plan, which has been approved by the USFS under the mine's approved Plan of Operations, which has formed the basis of the surety for the mine, and which ADEQ has reviewed. Within 90 days following notification of closure, the permittee shall submit for approval to the Groundwater Protection Value Stream, an updated closure plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3), which may be the existing Clean Closure Plan with any amendments or additions thereto that may be needed to ensure that those requirements are satisfied at the time of submission. The updated closure plan shall provide an estimate of the material removed from the ore body using 3-D mapping where accessible which shall include plan and cross-sectional views showing the void spaces and geologic structures in place in the ore body. The updated closure plan shall include an evaluation of the mapping results as it relates to stability. The updated closure plan shall provide a summary of the primary sources and amount of water pumped from the mine workings as a monthly average and the water quality of the water pumped from the mine sump to the Lined Non-Stormwater Impoundment using the information collected pursuant to the routine discharge monitoring requirements for the mine sump in Section 2.5.1.1 and Section 4.2, Table 7: ROUTINE DISCHARGE MONITORING.

Regardless of whether the updated closure plan achieves clean-closure immediately, the permittee shall continue to conduct post-closure groundwater monitoring and reporting at the POCs, including SMRF submittals for a period of 30 years in accordance with the conditions of the permit. If the closure plan contains a schedule for bringing the facility to a clean-closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

#### **2.9.2. Closure Completion**

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Protection Value Stream indicating that the approved closure plan has been implemented fully and providing supporting documentation to demonstrate that clean-closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). Regardless of whether clean-closure has been achieved, the permittee shall continue to conduct post-closure compliance groundwater monitoring and reporting at the POCs, including SMRF submittals, as outlined in Section 2.9.1. If any of the following conditions apply, the permittee shall follow any additional terms of post-closure stated in this permit:

1. Clean-closure cannot be achieved at the time of closure notification or within one year under a diligent schedule of closure actions;



2. Further action is necessary to keep the facility in compliance with the AWQS at the applicable POC or, for any pollutant for which the AWQS was exceeded at the time this permit was issued, further action is necessary to prevent the facility from further degrading the aquifer at the applicable POC with respect to that pollutant;
3. Remedial, mitigative or corrective actions or controls are necessary to comply with A.R.S. § 49-201(30) and Title 49, Chapter 2, Article 3;
4. Further action is necessary to meet property use restrictions.

**2.10. Post-Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9 A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Protection Value Stream but consistent with Section 2.9.1 shall include at a minimum a requirement to conduct post-closure groundwater monitoring and reporting at the POCs, including SMRF submittals, for a period of 30 years in accordance with the conditions of the permit.

The permittee shall submit for approval to the Groundwater Protection Value Stream a post-closure plan that addresses post-closure maintenance and monitoring actions at the facility. The post-closure plan shall meet all requirements of A.R.S. § 49-201(36) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the post-closure plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the post-closure plan.

**3.0 COMPLIANCE SCHEDULE**

[A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

Unless otherwise indicated, for each compliance schedule item listed below, the permittee shall submit the required information to the Groundwater Protection Value Stream.

**Table 5: COMPLIANCE SCHEDULE ITEMS**

<b>No.</b>	<b>Description</b>	<b>Due By:</b>	<b>Permit Amendment Required?</b>
1	The permittee shall submit a demonstration that the financial assurance mechanism listed in Section 2.1, Financial Capability, is being maintained as per A.R.S. § 49-243.N.4 and A.A.C. R18-9-A203(H) for all estimated closure and post-closure costs including updated costs submitted under Section 3.0, No. 2 below. The demonstration shall include a statement that the closure and post-closure strategy has not changed, the discharging facilities listed in the permit have not been altered in a manner that would affect the closure and post-closure costs, and discharging facilities have not been added. The demonstration shall also include information in support of the Performance Surety Bond demonstration as required in A.A.C. R18-9-A203(C)(2).	Every six years from the date following permit issuance.	No
2	The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5) and A.R.S. § 49-243.N.2.a.	Every six years from the date following permit issuance.	Yes
3	Submit Initial Monitoring Report in accordance with Section 2.7.4.1.	Within 60 days following permit issuance.	No
4	The permittee shall submit an APP “Minor” amendment application which includes an ambient groundwater monitoring report to establish ALs and AQLs for POC #4 (Redwall-Muav aquifer). At a minimum the report shall contain analysis of background sampling data, statistical approach to setting an AL and AQL for arsenic and an AQL for uranium, copies of all ADWR documents related to the wells, as-built diagrams of wells, and latitude and longitude of each well. The report shall be sealed by an Arizona Registered Geologist or other qualified registrant.	Within 90 days following permit issuance.	Yes (“Minor” Amendment)

Table 5: COMPLIANCE SCHEDULE ITEMS			
5	The permittee shall submit an APP “Minor” amendment application which includes an ambient groundwater monitoring report to establish ALs and AQLs for the POCs for the perched Coconino aquifer and any remaining parameters for the Redwall-Muav aquifer where limits have not been previously established. At a minimum the report shall contain analysis of background sampling data, statistical approach to setting ALs and AQLs, copies of all ADWR documents related to the wells, as-built diagrams of wells, and latitude and longitude of each well. The report shall be sealed by an Arizona Registered Geologist or other qualified registrant.	Within 90 days of completion of ambient groundwater monitoring under Section 4.2, Table 8: AMBIENT GROUNDWATER MONITORING.	Yes (“Minor” Amendment)
6	Begin Compliance Groundwater Monitoring in POC Wells, as required under Section 4.2, Table 9: COMPLIANCE GROUNDWATER MONITORING.	First quarter after ALs and AQLs have been established.	No
7	Submit Annual Report in accordance with Section 2.7.4.2.	Annually by January 30th	No
8	Submit Groundwater Monitoring Demonstration report in accordance with Section 2.7.4.3. The report shall be sealed by an Arizona Registered Geologist or other qualified registrant.	Every two years from the date of permit issuance through post-closure.	No
9	Submit as-built plans for the Intermediate Ore Stockpile (IOS)	Within 90 days of completion of the construction.	No
10	Submit a Significant Amendment if the mine shaft or declines are planned below the level 1,997 feet below ground surface.	180 days prior to planned construction.	Yes
11	Permittee shall submit a supplemental financial assurance mechanism to include updated post-closure costs of \$132,581.	Within 180 days following permit issuance	No

**4.0 TABLES OF MONITORING REQUIREMENTS**
**4.1. PERMITTED FACILITIES AND BADCT**

Table 6: PERMITTED FACILITIES AND BADCT			
Facility Name	Latitude (North)	Longitude (West)	Facility BADCT
Lined Non-Stormwater Impoundment	35° 52' 57.14"	-112° 05' 44.24"	<p>The Impoundment has been constructed to contain and evaporate water collected in the Mine shaft sump and water capture rings, stormwater runoff from a large portion of the site as well as runoff from the Development Rock Stockpile and Intermediate Ore Stockpile are directed to the Impoundment.</p> <p>The impoundment is currently utilizing four floating APEX enhanced evaporation (EE) systems. Three of them currently use heated pond water and one uses ambient pond water. The permittee may install additional heated or unheated pond water EE systems, if needed. The use of APEX EE systems has been approved under previous general permits.</p> <p>BADCT: Lined non-stormwater impoundment 60-mil HDPE liner overlying GCL liner, compacted subgrade. Engineered anchor trench securing liner.</p> <p>A minimum 2 feet of freeboard is required to be maintained in the Non-Stormwater Impoundment.</p>
Development Rock Stockpile	35° 52' 56.43"	-112° 05' 49.07"	<p>This stockpile will manage all non-ore material excavated from the shaft and other Mine workings throughout the active life of the Mine. This material will be used as backfill in the underground Mine workings consistent with the Mine Clean Closure Plan and the APP exemption in A.R.S. § 49-250(B)(5).</p> <p>BADCT: set on 12-inch pad of screened native fill material; drainage to Lined Non-Stormwater Impoundment through HDPE culvert. Protected by 3-foot high perimeter berm; graded to minimize ponding.</p>
Intermediate Ore Stockpile	35° 52' 58.11"	-112° 05' 43.71"	<p>This stockpile will manage all in-process ore material prior to its loading and removal from the Mine for off-site milling and processing.</p> <p>BADCT: 30-mil PVC liner over prepared subgrade. Protected by 12-inch pad of on-site crushed and sized material (as per Iron Rock Drawing dated 10/29/2020), drainage to the Lined Non-Stormwater Impoundment through HDPE culvert. Protected by 3-foot high perimeter berm; graded to minimize ponding.</p>

Table 6: PERMITTED FACILITIES AND BADCT

<p>Lined Mine Shaft Sump</p>	<p>35° 52' 59.96"</p>	<p>-112° 5' 45.12"</p>	<p>The liner at the bottom of the Mine Shaft Sump contains aquifer water seeping from the sides of the mine shaft and, following future development, may contain water collected from the ventilation shaft and stopes.</p> <p>Mine shaft sump -- The sump collects water accumulating in the Mine workings. The sump has been designed and constructed with a lining system over the host rock to provide an effective barrier against seepage of Mine water from the sump. The main shaft sump has a double liner system at the bottom of the shaft sump. The bottom 12 feet of the shaft walls and floor have been sealed with a spray-applied poly urea seal to provide a nearly impermeable liner in the sump. The liner was constructed by first compacting a layer of mine run material on the floor of the shaft to provide an even surface for the application of the poly urea liner. A 250-mil thick layer of poly urea was then applied in even coats over the floor and bottom 12 feet of the shaft. A single layer of GCL was installed above the poly urea liner and lapped 12-inches over the base of the Mine shaft wall. A 4-inch protective sand layer was placed on the GCL and 32-inches of pea gravel placed above the sand layer to provide a protective cushion at the base of the shaft. If the shaft is deepened consistent with the USFS-approved Plan of Operations, a similarly protective designed, constructed, and operated sump will be installed in the bottom of the deepened shaft. If mining activities go to a depth below the bottom of the lined shaft sump consistent with the USFS-approved Plan of Operations, pumping facilities will be installed so seepage water will be collected and pumped to the main shaft sump. During non-operating conditions, the sump will have two (2) pumps installed to pump the sump water in case the other pump is down. During mining operations, there will be one pump on standby and available for immediate replacement, as practicable, to pump the sump water in case the other pump is down. Each pump will have sufficient capacity to pump water from the sump. The pumps will be provided by two (2) sources of electric power or a stand-by auxiliary power (generator) to limit disruption to the pumping of the water accumulating in the sump in case of a power outage. Upon notification of the power outage, standby personnel will be dispatched to switch the power source and resume pumping of the water from the sump. A water meter will be provided to measure water pumped from the sump for water budget purposes. The sump will have an alarm with light and audio to alert if the water in the shaft reaches the top of the liner.</p> <p>The water level in the sump will be maintained no higher than the top of the liner.</p>
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Table 7: ROUTINE DISCHARGE MONITORING

Sampling Point Number	Sampling Point Identification	Latitude (North)	Longitude (West)
1	Outflow pipe of the Mine Shaft Lined Sump water to the Lined Non-Stormwater Impoundment	35° 52' 57.14" N	-112° 05' 44.24" W
Parameter	Units	Sampling Frequency	Reporting Frequency
Total Flow <sup>1</sup> : Daily <sup>2</sup>	gpd <sup>3</sup>	Daily	Quarterly
Total Flow: Monthly Average <sup>4</sup>	gpd	Monthly Calculation	Quarterly
Nitrate-Nitrite as N	mg/l <sup>5</sup>	Quarterly	Quarterly
Total Dissolved Solids (TDS)	mg/l	Quarterly	Quarterly
Alkalinity	mg/l	Quarterly	Quarterly
Sulfate	mg/l	Quarterly	Quarterly
pH <sup>6</sup>	SU <sup>7</sup>	Quarterly	Quarterly
Specific Conductance	mhos/cm	Quarterly	Quarterly
Fluoride	mg/l	Quarterly	Quarterly
Metals (Total)			
Antimony	mg/l	Quarterly	Quarterly
Arsenic	mg/l	Quarterly	Quarterly
Barium	mg/l	Quarterly	Quarterly
Beryllium	mg/l	Quarterly	Quarterly
Cadmium	mg/l	Quarterly	Quarterly
Chromium	mg/l	Quarterly	Quarterly
Copper	mg/l	Quarterly	Quarterly
Iron	mg/l	Quarterly	Quarterly
Lead	mg/l	Quarterly	Quarterly
Manganese	mg/l	Quarterly	Quarterly
Mercury	mg/l	Quarterly	Quarterly
Nickel	mg/l	Quarterly	Quarterly
Selenium	mg/l	Quarterly	Quarterly
Thallium	mg/l	Quarterly	Quarterly
Vanadium	mg/l	Quarterly	Quarterly
Zinc	mg/l	Quarterly	Quarterly
Calcium	mg/l	Quarterly	Quarterly
Magnesium	mg/l	Quarterly	Quarterly
Potassium	mg/l	Quarterly	Quarterly
Sodium	mg/l	Quarterly	Quarterly
Uranium	mg/l	Quarterly	Quarterly

<sup>1</sup> Total flow for all methods of disposal

<sup>2</sup> Total Daily Flow shall be measured using a continuous recording flow meter that totals the flows daily.

<sup>3</sup> gpd = gallons per day

<sup>4</sup> Monthly Average means the calculated average of daily flow values in a month

<sup>5</sup> mg/l = milligrams/liter

<sup>6</sup> Field Parameter

<sup>7</sup> SU = standard units

Table 7: ROUTINE DISCHARGE MONITORING

<b>Radionuclides (Total)</b>			
Adjusted Gross Alpha Activity <sup>8</sup>	pCi/L <sup>9</sup>	Quarterly	Quarterly
Radium226	pCi/L	Quarterly	Quarterly
Radium228	pCi/L	Quarterly	Quarterly
Uranium-Isotopes	pCi/L	Quarterly	Quarterly

<sup>8</sup> The concentration of gross alpha particle activity includes radium-226, but excludes radon and uranium.

<sup>9</sup> pCi/L = picocuries per liter



**Table 8: AMBIENT GROUNDWATER MONITORING<sup>10</sup>**

Sampling Point Number	Sampling Point Identification	Latitude (North)	Longitude (West)
2	POC #1 – (Coconino aquifer – East Well)	35° 53' 00.0801"	-112° 05' 41.3282"
3	POC #2 – (Coconino aquifer – North Well)	35° 53' 02.5022"	-112° 05' 47.5984"
4	POC #3 – (Coconino aquifer – South Well)	35° 52' 55.2988"	-112° 05' 47.1674"
5	POC #4 – (Redwall-Muav aquifer)	35° 21' 00"	-112° 34' 55"
Parameter	Units	Sampling Frequency	Reporting Frequency <sup>11</sup>
Nitrate-Nitrite as N	mg/l <sup>12</sup>	Quarterly	Once
Total Dissolved Solids (TDS)	mg/L	Quarterly	Once
Alkalinity	mg/L	Quarterly	Once
Sulfate	mg/L	Quarterly	Once
pH <sup>13</sup>	SU <sup>14</sup>	Quarterly	Once
Specific Conductance	mhos/cm	Quarterly	Once
Oxidation-Reduction Potential (ORP, Redox) <sup>15</sup>	millivolts (mV)	Quarterly	Once
Dissolved Oxygen (DO) <sup>16</sup>	mg/L	Quarterly	Once
Water Level <sup>17</sup>	Feet amsl <sup>18</sup>	Quarterly	Once
Fluoride	mg/l	Quarterly	Once
Metals (Dissolved)			
Antimony	mg/l	Quarterly	Once
Arsenic	mg/l	Quarterly	Once
Barium	mg/l	Quarterly	Once
Beryllium	mg/l	Quarterly	Once
Cadmium	mg/l	Quarterly	Once
Chromium	mg/l	Quarterly	Once
Lead	mg/l	Quarterly	Once
Mercury	mg/l	Quarterly	Once
Nickel	mg/l	Quarterly	Once
Selenium	mg/l	Quarterly	Once
Thallium	mg/l	Quarterly	Once
Calcium	mg/l	Quarterly	Once
Magnesium	mg/l	Quarterly	Once
Potassium	mg/l	Quarterly	Once
Sodium	mg/l	Quarterly	Once
Uranium	mg/l	Quarterly	Once
Radionuclides (Total)			
Adjusted Gross Alpha Activity <sup>19</sup>	pCi/L <sup>20</sup>	Quarterly	Once
Radium226	pCi/L	Quarterly	Once
Radium228	pCi/L	Quarterly	Once
Uranium Isotopes (234, 235, 238)	pCi/L	Quarterly	Once

<sup>10</sup> Ambient groundwater monitoring establishes the baseline groundwater quality conditions and for setting ALs and AQLs.

<sup>11</sup> Refer to Compliance Schedule Item No. 4 and 5

<sup>12</sup> mg/l = milligrams per liter

<sup>13</sup> Field Parameter

<sup>14</sup> SU = standard units

<sup>15</sup> Field Parameter

<sup>16</sup> Field Parameter

<sup>17</sup> See Section 2.5.3.2

<sup>18</sup> Amsl = above mean sea level, applicable to Coconino wells only

<sup>19</sup> The concentration of gross alpha particle activity includes radium-226, but excludes radon and uranium.

<sup>20</sup> pCi/L = picocuries per liter

**Table 9: COMPLIANCE GROUNDWATER MONITORING<sup>21</sup>**

<b>Sampling Point Number</b>	<b>Sampling Point Identification</b>			<b>Latitude (North)</b>	<b>Longitude (West)</b>
2	POC #1 – (Coconino aquifer – East Well)			35° 53' 00.0801"	-112° 05' 41.3282"
3	POC #2 – (Coconino aquifer – North Well)			35° 53' 02.5022"	-112° 05' 47.5984"
4	POC #3 – (Coconino aquifer – South Well)			35° 52' 55.2988"	-112° 05' 47.1674"
5	POC #4 – (Redwall-Muav aquifer)			35° 21' 00"	-112° 34' 55"
<b>Parameter</b>	<b>Alert Level (AL)</b>	<b>Aquifer Quality Limit (AQL)</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
Nitrate-Nitrite as N	Reserved <sup>22</sup>	Reserved	mg/l	Quarterly	Quarterly
Total Dissolved Solids (TDS)	Monitor <sup>23</sup>	Monitor	mg/L	Quarterly	Quarterly
Alkalinity	Monitor	Monitor	mg/L	Quarterly	Quarterly
Sulfate	Monitor	Monitor	mg/L	Quarterly	Quarterly
pH <sup>24</sup>	Reserved	Reserved	SU <sup>25</sup>	Quarterly	Quarterly
Specific Conductance	Monitor	Monitor	mhos/cm	Quarterly	Quarterly
Oxidation-Reduction Potential (ORP, Redox) <sup>26</sup>	Monitor	Monitor	millivolts (mV)	Quarterly	Quarterly
Dissolved Oxygen (DO) <sup>27</sup>	Monitor	Monitor	mg/L	Quarterly	Quarterly
Water Level <sup>28</sup>	Monitor	Monitor	Feet amsl <sup>29</sup>	Monthly	Quarterly
Fluoride	Reserved	Reserved	mg/l	Quarterly	Quarterly
<b>Metals (Dissolved)</b>					
Antimony	Reserved	Reserved	mg/l	Quarterly	Quarterly
Arsenic	Reserved	Reserved	mg/l	Quarterly	Quarterly
Barium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Beryllium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Cadmium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Chromium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Lead	Reserved	Reserved	mg/l	Quarterly	Quarterly
Mercury	Reserved	Reserved	mg/l	Quarterly	Quarterly
Nickel	Reserved	Reserved	mg/l	Quarterly	Quarterly
Selenium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Thallium	Reserved	Reserved	mg/l	Quarterly	Quarterly
Calcium	Monitor	Monitor	mg/l	Quarterly	Quarterly
Magnesium	Monitor	Monitor	mg/l	Quarterly	Quarterly
Potassium	Monitor	Monitor	mg/l	Quarterly	Quarterly
Sodium	Monitor	Monitor	mg/l	Quarterly	Quarterly
Uranium <sup>30</sup>	Monitor	Reserved	mg/l	Quarterly	Quarterly
<b>Radionuclides (Total)</b>					
Adjusted Gross Alpha Activity <sup>31</sup>	Reserved	Reserved	pCi/L <sup>32</sup>	Quarterly	Quarterly
Radium226	Reserved	Reserved	pCi/L	Quarterly	Quarterly
Radium228	Reserved	Reserved	pCi/L	Quarterly	Quarterly
Uranium Isotopes (234, 235, 238)	Monitor	Monitor	pCi/L	Quarterly	Quarterly

<sup>21</sup> Compliance Groundwater Monitoring begins after the completion of the Ambient Groundwater Monitoring and AL and AQLs have been established.

<sup>22</sup> Reserved = At the conclusion of ten (10) rounds of quarterly groundwater sampling, the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ to propose ALs and AQLs based on ambient data. The permit will be amended at the conclusion of Ambient Groundwater Monitoring to establish reserved values.

<sup>23</sup> Monitor = Analysis is required but an AQL and/or AL is not established at the time of permit issuance.

<sup>24</sup> Field Parameter

<sup>25</sup> SU = standard units

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<sup>26</sup> Field Parameter

<sup>27</sup> Field Parameter

<sup>28</sup> See Section 2.6.2.3.4.

<sup>29</sup> Amsl = above mean sea level

<sup>30</sup> Refer to Section 2.5.3.5.

<sup>31</sup> The concentration of gross alpha particle activity includes radium-226, but excludes radon and uranium.

<sup>32</sup> pCi/L = picocuries per liter

**Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING**

The permittee shall record the inspection performance levels in a log book as per Section 2.7.2, and report any exceedances as per Section 2.6.2. In the case of an exceedance, identify which structure exceeds the performance level in the log book.			
<b>Facility Name / Pollution Control Structure / Parameter</b>	<b>Operational Requirement / Performance Level</b>	<b>Inspection Frequency</b>	<b>Reporting Frequency</b>
POC Wells	Well cap and seals are intact. No discernable damage or deterioration of the well(s). Wells should be secured with a lock.	Monthly	See Section 2.7.2 and 2.5.3.1
Non-Stormwater Impoundment	No mechanical damage, seam failure, and maintenance of freeboard two feet.	Weekly	See Section 2.6.2.1 and 2.7.2
	Address accessible vegetation and debris.	Monthly	
	Remove bulk of accumulated residues, sediments, debris, and vegetation to maintain the integrity of the liner and the design capacity of the impoundment.	Annually	
Water Capture Rings	Maintain pumping records for the combined water rings in the main shaft when personnel are onsite.	Daily	See Section 2.6.2.1 and 2.7.2
Mine Shaft seeps	When the mine shaft is accessible during operations, observe the seeps in the saturated portion of the Coconino Formation for qualitative purposes.	Quarterly	See Section 2.6.2.1 and 2.7.2
Mine Shaft Sump Pumping System	Inspect pumps, when the mine shaft sump is accessible during operations, and power supply for proper operation, capacity, redundancy and structural integrity, refer to Table 6: PERMITTED FACILITIES AND BADCT.	Weekly	See Section 2.6.2.1 and 2.7.2
Mine Shaft Lined Sump Water Level	Inspect water meter measurement system for water pumped from sump and alarm monitoring system for proper operation.	Weekly	See Section 2.6.2.1 and 2.7.2
On-site Dust Control	Maintain records of water treatment system maintenance	Monthly	See Section 2.6.2.1
Ventilation Shaft	<p>Permittee shall construct the ventilation shaft so it drains any seepage water to the main shaft.</p> <p>If parts of the ventilation shaft or any stopes are developed lower than the bottom of the main sump, or have obstructions that prevent drainage and collection of the seepage water from these places to the main shaft sump, pumping facilities shall be installed so seepage water shall be collected and pumped to the main shaft sump.</p>	Monthly	See Section 2.6.2.1 and 2.7.2

## 5.0 REFERENCES AND PERTINENT INFORMATION

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

APP Application, dated: November 11, 2020

Contingency Plan, dated: November 11, 2020

## 6.0 NOTIFICATION PROVISIONS

### 6.1. Annual Registration Fees

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based on the amount of daily influent or discharge of pollutants in gallons per day (gpd) as established by A.R.S. § 49-242.

### 6.2. Duty to Comply

[A.R.S. §§ 49-221 through 263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

### 6.3. Duty to Provide Information

[A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

### 6.4. Compliance with Aquifer Water Quality Standards

[A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an Aquifer Water Quality Standard (AWQS) at the applicable point of compliance (POC) for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an AWQS for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

### 6.5. Technical and Financial Capability

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(C), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

**6.6. Reporting of Bankruptcy or Environmental Enforcement**

[A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. the filing of bankruptcy by the permittee; or
2. the entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

**6.7. Monitoring and Records**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, and with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

**6.8. Inspection and Entry**

[A.R.S. §§ 49-1009, 49-203(B), and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

**6.9. Duty to Modify**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices authorized by this permit.

**6.10. Permit Action: Amendment, Transfer, Suspension, and Revocation**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, suspended, or revoked for cause, under the rules of the Department. The permittee shall notify the Groundwater Protection Value Stream in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

**7.0. ADDITIONAL PERMIT CONDITIONS**

**7.1. Other Information**

[A.R.S. § 49-243(K)(8)]

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

**7.2. Severability**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

**7.3. Permit Transfer**

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).